

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
PHYSICS **0625/1**
PAPER 1 Multiple Choice
MAY/JUNE SESSION 2001 45 minutes

Additional materials:
Multiple Choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer **all** questions. For each question, there are four possible answers, **A, B, C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

Read very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

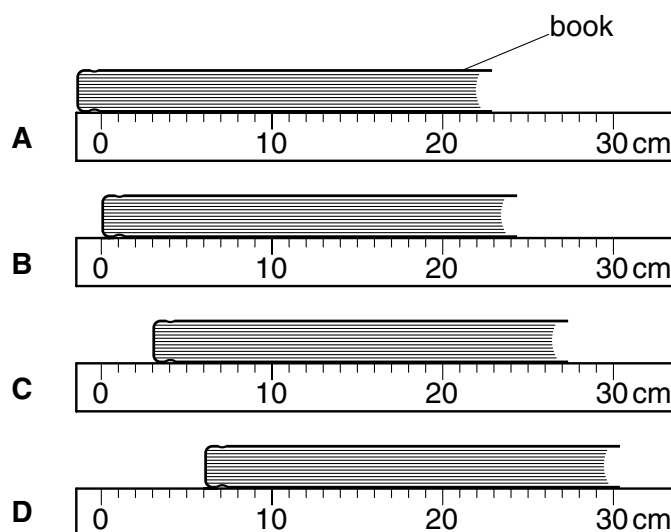
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

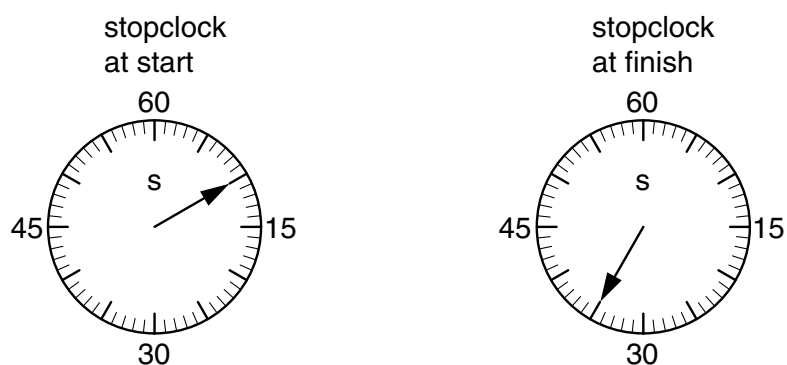
This question paper consists of 19 printed pages and 1 blank page.

- 1 A student measures the width of a book using a ruler.

Which diagram shows the best way to do this?



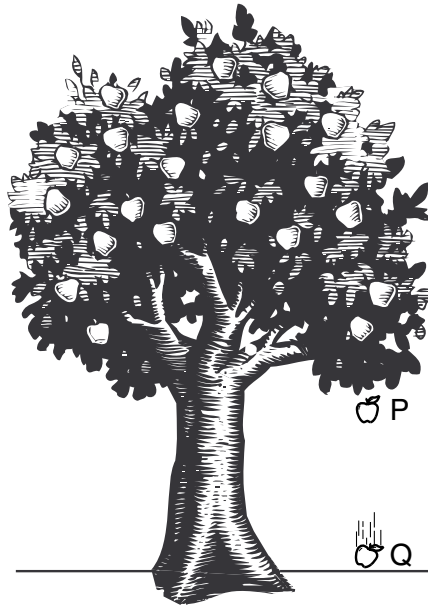
- 2 The diagrams show the times on a stopclock at the start and finish of an experiment.



How long did the experiment take?

- A** 10 s **B** 25 s **C** 35 s **D** 45 s

- 3 An apple falls from a tree. The diagram shows the apple at P, as it starts to fall, and at Q, just before it hits the ground. The acceleration due to gravity is g . Air resistance can be ignored.



What is the acceleration of the apple at position P and at position Q?

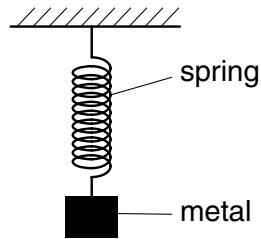
	acceleration at P	acceleration at Q
A	0	0
B	0	g
C	g	0
D	g	g

- 4 In a race, a car travels 60 times round a 3.6 km track. It takes 2.4 hours.

What is the average speed of the car?

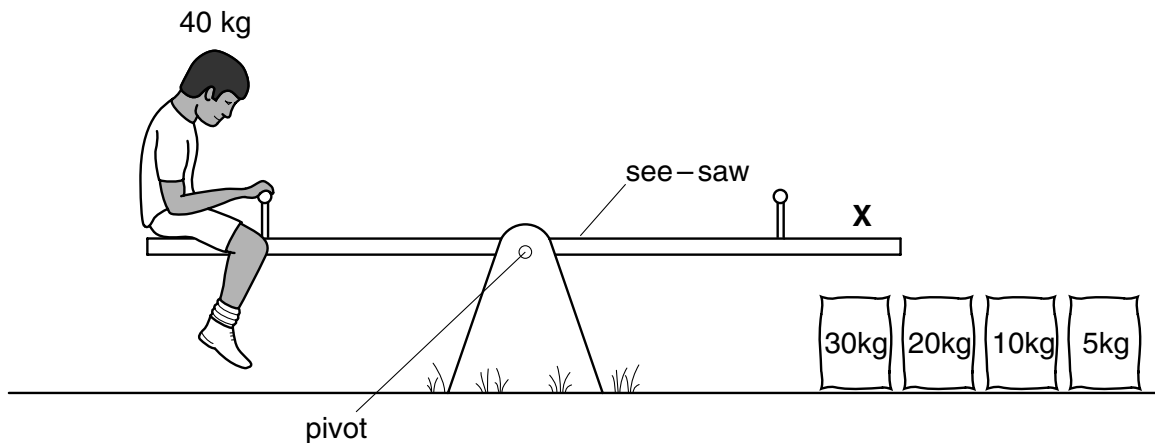
- A** 2.5 km/h
- B** 90 km/h
- C** 144 km/h
- D** 216 km/h

- 5 A spring is stretched by hanging a piece of metal from it.



What is the name given to the force that stretches the spring?

- A friction
 B mass
 C pressure
 D weight
- 6 A child of mass 40 kg sits on one end of a see-saw. The pivot is at the centre of the see-saw. There are four sacks of sand, each with a different mass, as shown.



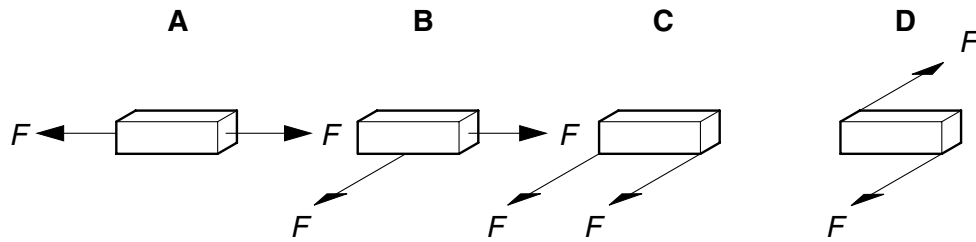
How many of the sacks must be placed at X to balance the child?

- A 1 B 2 C 3 D 4
- 7 An object has a mass of 75 g and a volume of 15 cm³.

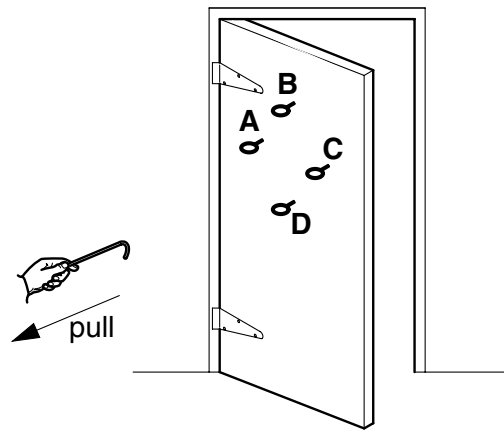
What is its density?

- A 0.2 g/cm³ B 5 g/cm³ C 60 g/cm³ D 90 g/cm³

- 8 The diagrams show a brick resting on a smooth surface. Two equal forces F act on the brick.
- In which diagram does the brick **not** move?



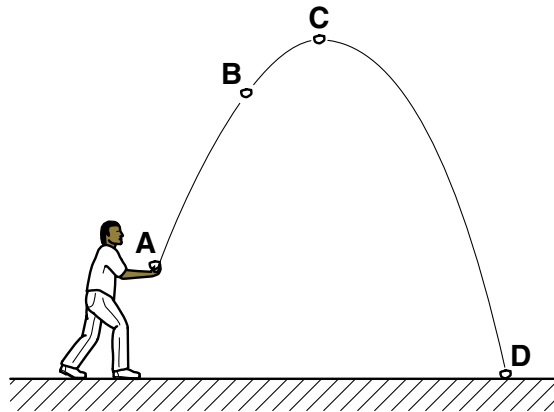
- 9 Four rings are screwed into a door, as shown. The door can be opened by putting a hook into one of the rings and pulling.



Which ring should be used if the pulling force is to be as small as possible?

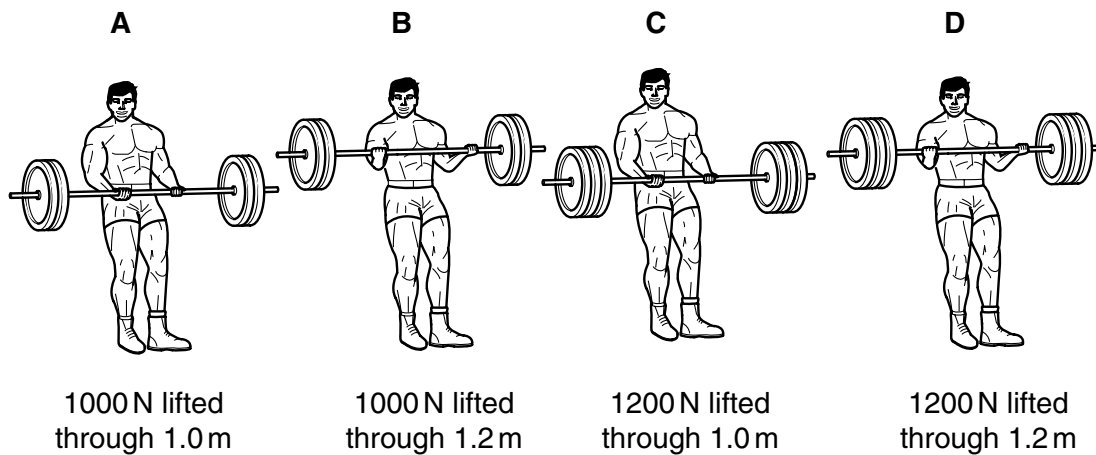
- 10** A stone is thrown into the air. The diagram shows the path of the stone through the air.

At which position is the potential energy of the stone greatest?



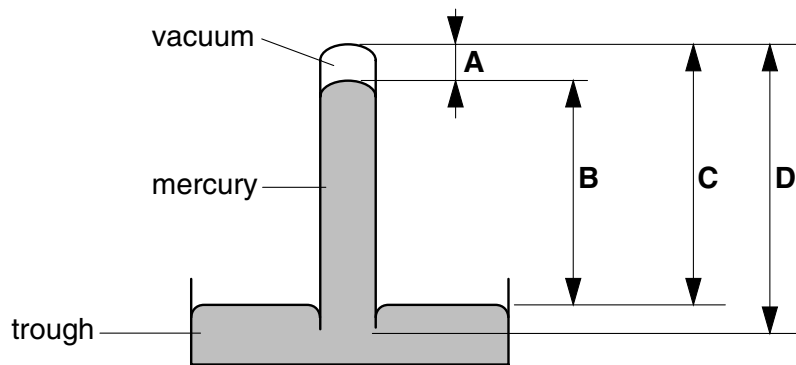
- 11** Four weightlifters lift weights to different heights.

Which weightlifter does the most work?

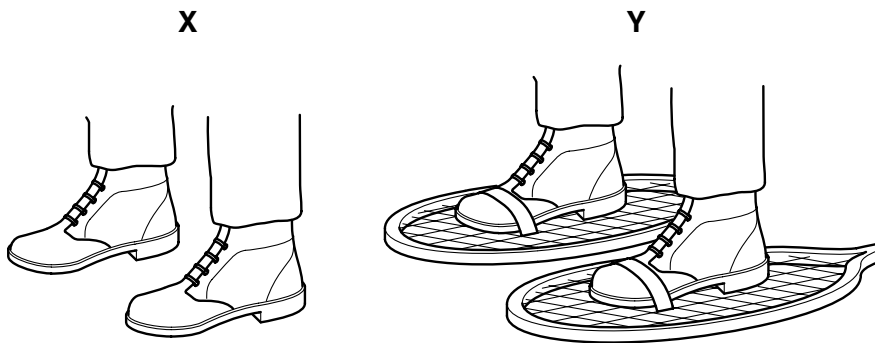


12 The diagram shows a simple barometer.

Which distance should be measured to find the atmospheric pressure?



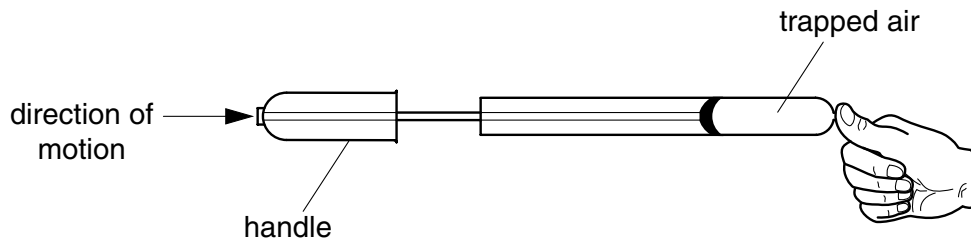
13 Two boys **X** and **Y** each have the same total weight and are standing on snow.



Which boy is more likely to sink into the snow and why?

	boy	pressure on snow
A	X	larger than Y
B	X	smaller than Y
C	Y	larger than X
D	Y	smaller than X

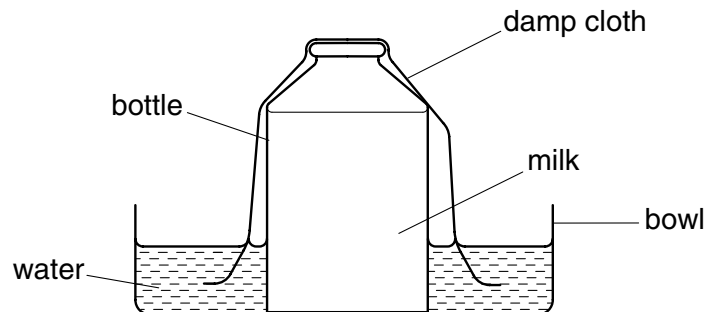
- 14 A student places his thumb firmly on the outlet of a bicycle pump, to stop the air coming out.



What happens to the pressure and the volume of the trapped air as the pump handle is pushed in?

	pressure	volume
A	decreases	decreases
B	decreases	remains the same
C	increases	decreases
D	increases	remains the same

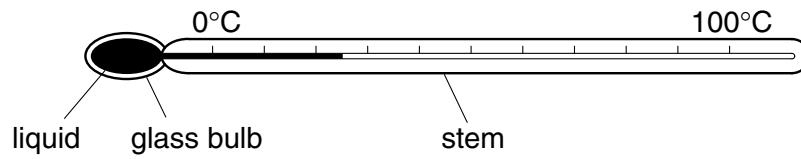
- 15 To keep a bottle of milk cold without a refrigerator on a hot day, the bottle can be covered with a damp cloth in a bowl of water.



How does this method keep the milk cold?

- A** Milk condenses on the cloth.
- B** Milk evaporates from the cloth.
- C** Water condenses on the cloth.
- D** Water evaporates from the cloth.

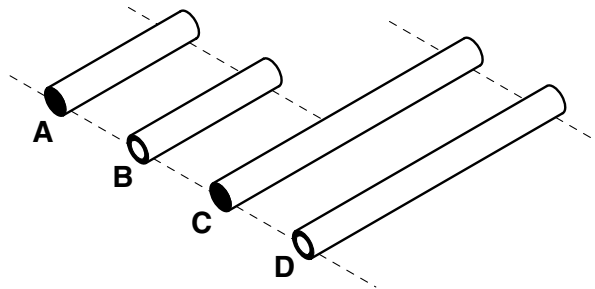
- 16 The diagram shows a liquid-in-glass thermometer.



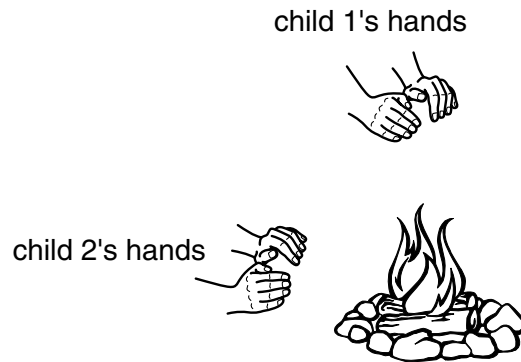
When the thermometer becomes hotter, the liquid moves further along the stem.

Why is this?

- A The glass contracts.
 - B The glass expands.
 - C The liquid contracts.
 - D The liquid expands.
- 17 Two copper rods, **A** and **C**, and two copper tubes, **B** and **D**, have the same external diameter.
- Which rod has the highest thermal capacity?



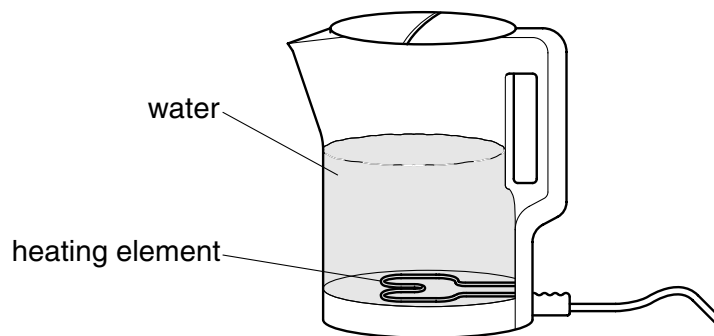
- 18** On a cold night, two children sit next to a camp fire to warm their hands. Their hands are the same distance from the fire. Child 1 holds his hands over the fire and child 2 holds her hands in front of the fire.



How does the heat from the fire reach each child's hands?

	child 1	child 2
A	convection only	radiation only
B	convection and radiation	radiation only
C	radiation only	convection and radiation
D	radiation only	convection only

- 19** An electric kettle contains a metal heating element.



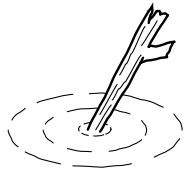
What are the main processes by which heat energy is transferred from the element to the water, and throughout the water?

heat transfer process		
	element to water	throughout water
A	conduction	convection
B	convection	radiation
C	radiation	conduction
D	radiation	convection

20 The diagrams show four sources of waves.

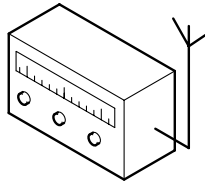
Which source generates longitudinal waves?

A



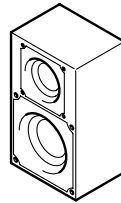
stick pushed up
and down in water

B



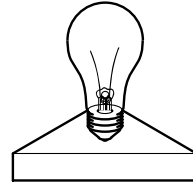
radio
transmitter

C



loudspeaker

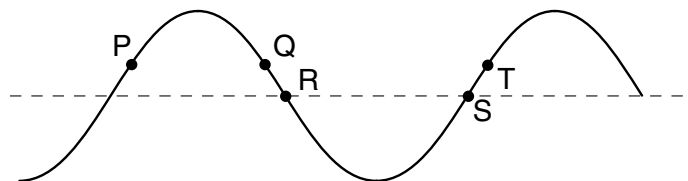
D



lamp

21 The diagram shows a wave on the surface of some water.

At which two points are the molecules moving in the same vertical direction at the same time?



A P and Q

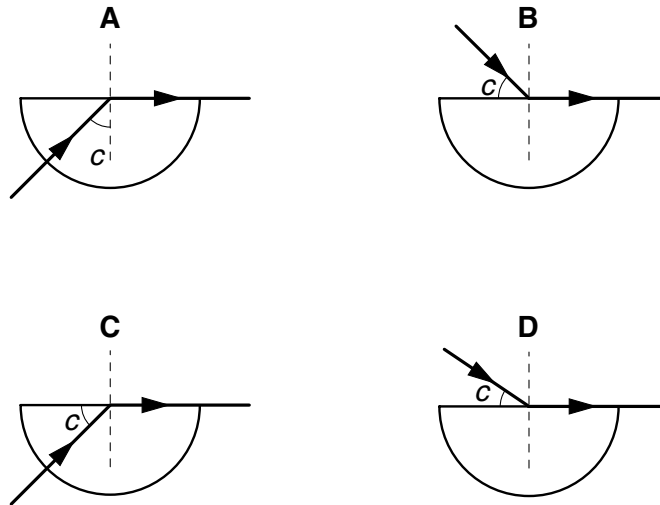
B P and T

C Q and T

D R and S

22 The diagrams show a semi-circular glass block.

Which diagram correctly shows the path of the ray of light and the critical angle c ?



23 A student copies a diagram of the electromagnetic spectrum but makes a mistake.

radio waves	micro-waves	infra-red waves	visible light	X-rays	ultra-violet waves	gamma rays
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long wavelength

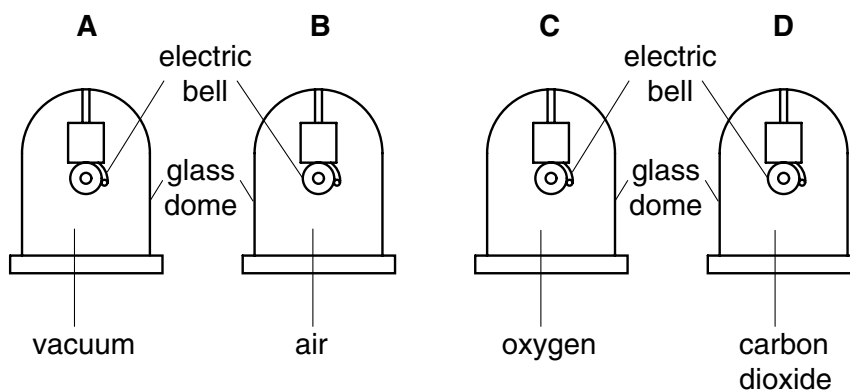
short wavelength

Which **two** names should be interchanged so that the order is correct?

- A infra-red waves and radio waves
- B infra-red waves and ultra-violet waves
- C radio waves and visible light
- D ultra-violet waves and X-rays

24 An electric bell is ringing inside a glass dome.

In which situation would the bell sound quietest?

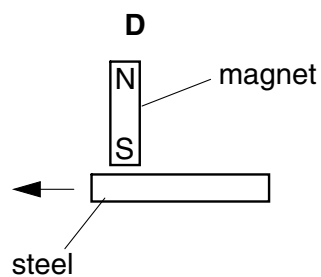
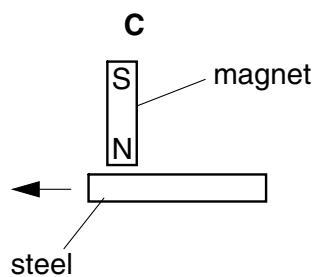
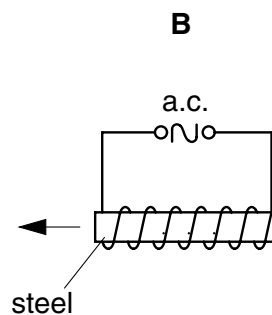
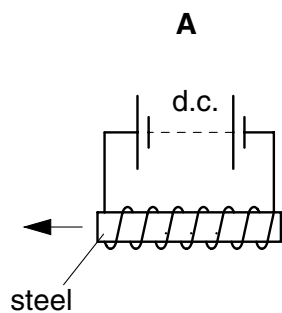


- 25** In a test, a car horn is found to be too loud and the pitch of the note is too high. What information does this give about the amplitude and the frequency of the sound wave produced?

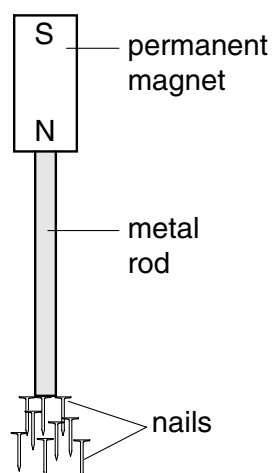
	amplitude	frequency
A	too large	too large
B	too large	too small
C	too small	too large
D	too small	too small

- 26** The diagrams show a magnetised piece of steel being moved slowly to the left.

Which diagram shows the best method of demagnetising the steel?



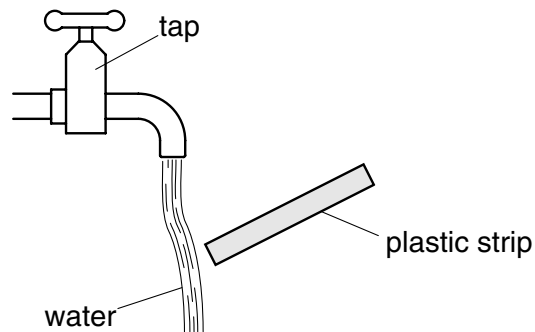
- 27** The diagram shows some nails attracted to a metal rod by magnetic induction.



From what could the metal rod be made?

- A** aluminium
 - B** copper
 - C** iron
 - D** magnesium
- 28** What is the unit of potential difference?
- A** joule
 - B** newton
 - C** volt
 - D** watt

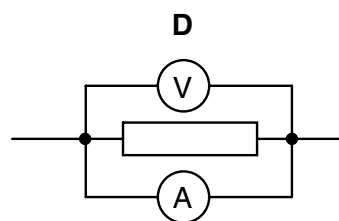
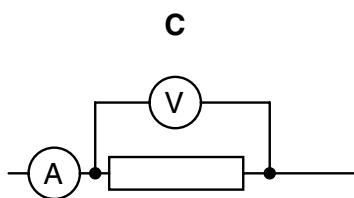
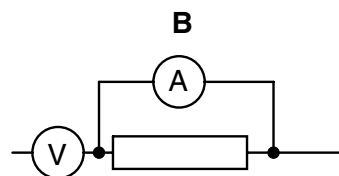
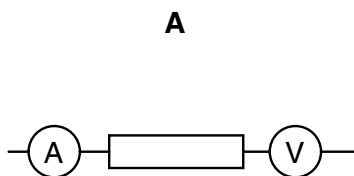
- 29** A plastic strip is rubbed on a piece of cloth and then held near water running slowly from a tap. The water moves towards the plastic strip.



Why does this happen?

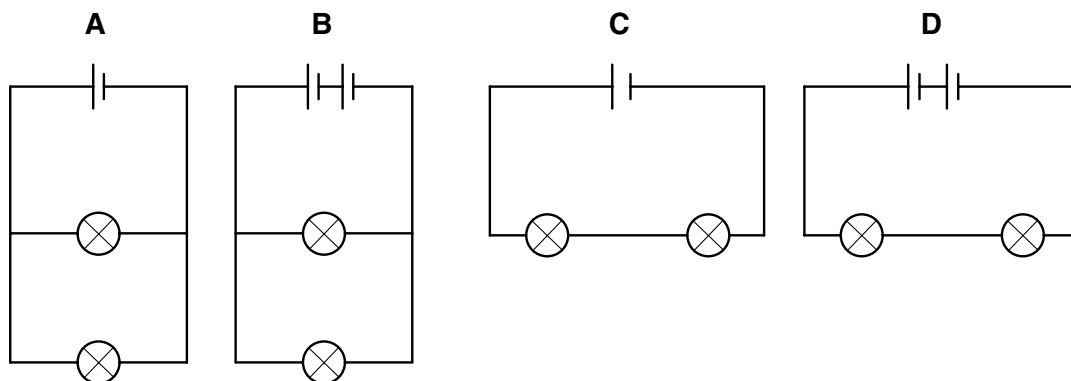
- A** The plastic strip cools the water.
 - B** The plastic strip warms the water.
 - C** There is a magnetic force on the water.
 - D** There is an electrostatic force on the water.
- 30** The diagrams show part of an electric circuit containing an ammeter and a voltmeter.

Which arrangement should be used to measure the p.d. across the resistor and the current through it?



31 The circuits contain identical lamps and identical cells.

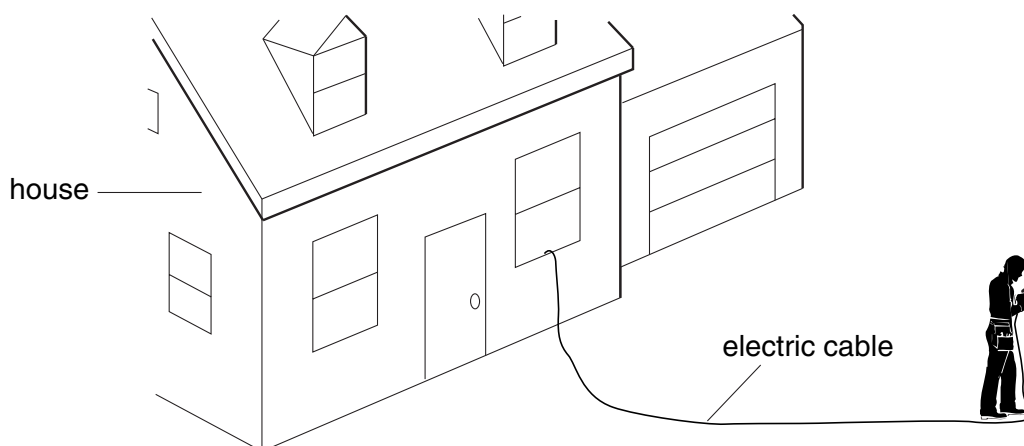
In which circuit will the lamps be brightest?



32 Why are lamps in the lighting circuit of a house connected in parallel and not in series?

- A** It allows them to be switched on and off independently.
- B** It uses less electrical energy.
- C** The filaments are less likely to burn out.
- D** The p.d. across each lamp is reduced.

33 A builder plugs an electric drill into a socket inside a house.

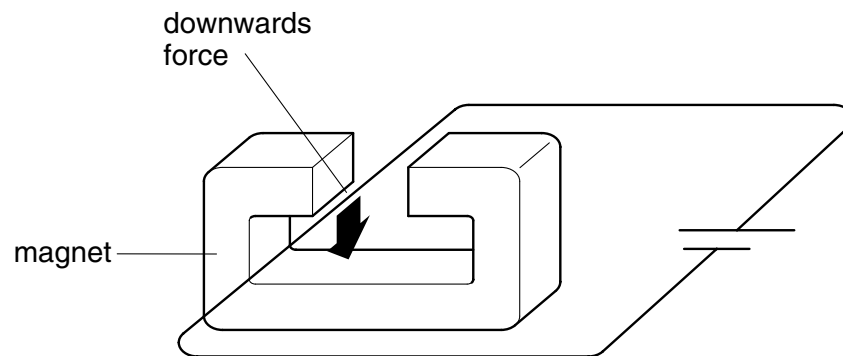


He uses the drill outdoors. It starts to rain heavily.

Why is it dangerous to continue using the electric drill in the rain?

- A** The drill could give the builder an electric shock.
- B** The drill could overheat.
- C** The fuse could blow.
- D** The rain could rust the drill.

- 34** A wire is placed between the poles of a magnet and is briefly connected to a cell. It experiences a downwards force.

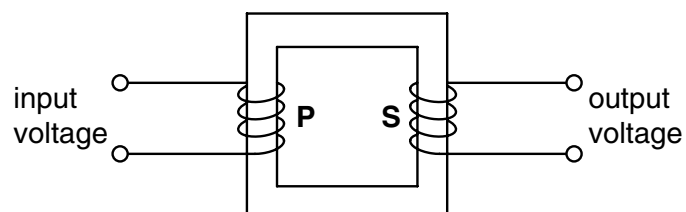


The cell is now reversed so that it is connected the other way round.

What happens to the direction of the magnetic field of the magnet and to the direction of the force on the wire?

	direction of magnetic field	direction of force
A	reversed	reversed
B	reversed	unchanged
C	unchanged	reversed
D	unchanged	unchanged

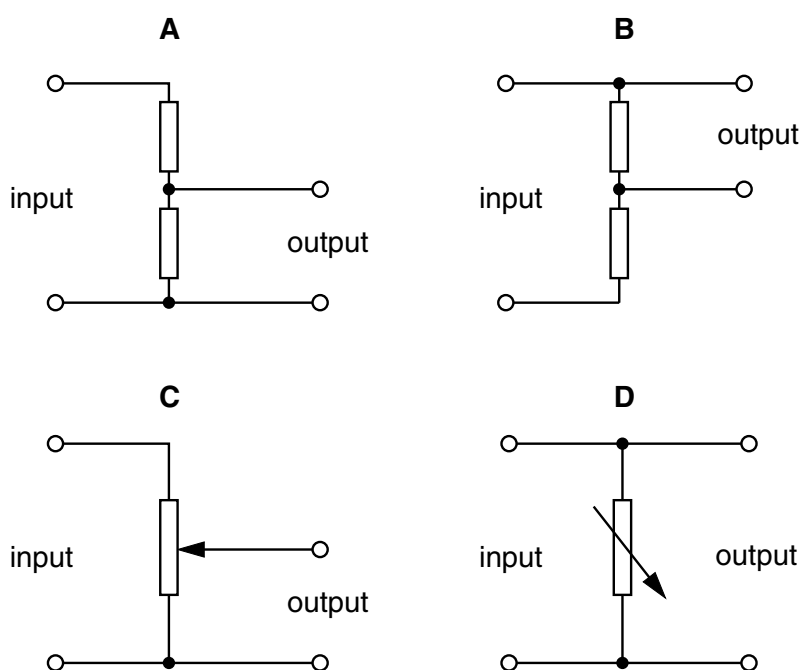
- 35** The diagram represents a transformer.



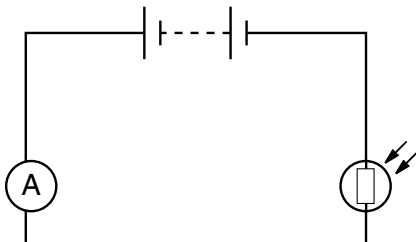
Which arrangement would make the output voltage higher than the input voltage?

	number of turns on primary coil P	number of turns on secondary coil S	type of input voltage
A	50	100	a.c.
B	50	100	d.c.
C	100	50	a.c.
D	100	50	d.c.

36 Which circuit will act as a variable potential divider?



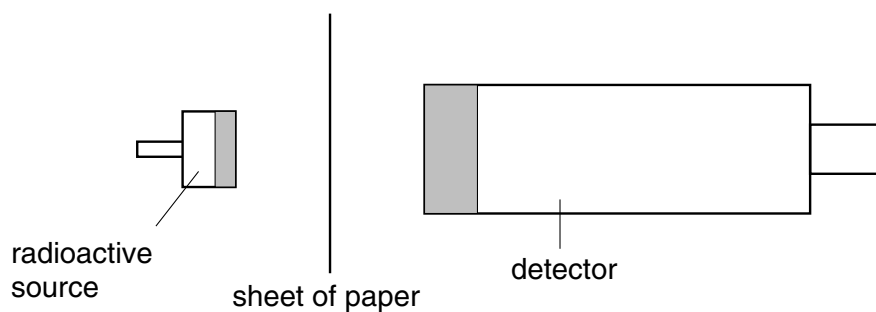
37 The circuit shown contains a light dependent resistor (LDR) and an ammeter, in series with a battery.



How does the circuit behave when more light shines on it?

	resistance of LDR	current through ammeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

- 38** A thick sheet of paper is placed between a radioactive source and a detector.



Which types of radiation can pass through the paper?

- A** alpha-particles, beta-particles and gamma radiation
B alpha-particles and gamma radiation
C alpha-particles and beta-particles
D beta-particles and gamma radiation
- 39** The count rate of radiation produced by a radioactive sample is measured every minute. The results are recorded in the table.

time / minutes	count rate / per second
0	80
1	56
2	40
3	28
4	20
5	14

What is the half-life of the radioactive material?

- A** $\frac{1}{2}$ minute **B** 2 minutes **C** $2\frac{1}{2}$ minutes **D** 5 minutes
- 40** A nuclide of lithium contains 3 protons and 4 neutrons.

Which symbol represents this nuclide?

- A** ${}^4_3\text{Li}$ **B** ${}^3_4\text{Li}$ **C** ${}^7_3\text{Li}$ **D** ${}^3_7\text{Li}$

